# Data from the Commercial Fishery for Arctic Charr, *Salvelinus alpinus* (Linnaeus), in the Cambridge Bay Area, Northwest Territories, 1979-80

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by

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## ABSTRACT

Carder, G.W., 1981. Data from the commercial fishery for Arctic charr, *Salvelinus alpinus* (Linnaeus), in the Cambridge Bay area, Northwest Territories, 1979-80. Can. Data Rep. Fish Aquat. Sci. 284: v + 22 p.

Data from biological sampling at the fishing site and fish plant on the Cambridge Bay commercial fishery are presented. Arctic charr, from a total of eight rivers, were sampled, during 1979 and 1980, either during the downstream (early summer) or upstream (late summer) migrations, for age, length and weight.


Key words: catch composition; catch statistics; commercial fishing; exploitation; fishery management; life history; monitoring.


## RESUME

Carder, G.W., 1981. Data from the commercial fishery for Arctic charr, *Salvelinus alpinus* (Linnaeus), in the Cambridge Bay area, Northwest Territories, 1979-80. Can. Data Rep. Fish Aquat. Sci. 284: v + 22 p.

L'ouvrage présente des données obtenues par suite d'échantillonnages effectués à l'emplacement de pêche et à l'usine de transformation du poisson, à la pêche commerciale de Cambridge Bay. Au cours des années 1979 et 1980, l'omble chevalier provenant de huit rivières a été échantillonné, à l'époque de sa migration vers la mer (début été) et vers l'amont (fin été). On a enregistré l'âge, la taille et le poids des poissons échantillonnés.


Mots-clés: composition des prises; statistiques sur la capture; pêche commerciale; exploitation; gestion des pêches; histoire de sa vie; contrôle.

# INTRODUCTION

The Department of Fisheries and Oceans (DFO) has monitored the commercial fishery at Cambridge Bay, Northwest Territories, since 1971 (Kristofferson and Carder 1980). Information collected from biological samples taken has been used to assess the population status of the various exploited Arctic charr stocks. Data obtained from 1979 and 1980 are presented in this report.

# MATERIALS AND METHODS

## THE FISHERY

Information regarding the history of the Cambridge Bay commercial fishery can be obtained from Barlishen and Webber (1973). Data from the fishery for 1971-78 and the description of the recent fishery are given in Kristofferson and Carder (1980).

Summer fishing commenced during 1979 and 1980 shortly after breakup (during the second week of July). At this time Arctic charr begin their downstream migration to the sea (Scott and Crossman 1973; McPhail and Lindsey 1970). The Paliryuak, Halovik and Lauchlan rivers were fished during these downstream migrations (mid-July) while the Ekalluk, Ellice and Perry rivers were fished during upstream migrations (mid-August to early September). The Jayco River was fished during the downstream migration in 1979 and in 1980 during both upstream and downstream migrations. The Collinson Peninsula was fished in 1979 only, during the upstream migration. Locations fished are shown in Fig. 1.

Arctic charr sampled were caught primarily by gillnet (commercial fishery) during the 1979 and 1980 migrations. Mesh sizes varied from 139 mm to 159 mm stretched measure. In 1980 an experimental fish weir (saputit) was used at the Jayco River to take the latter two thirds of the quota during the upstream migration. Local fishermen helped with the construction and operation. The project was supervised by the Fish and Marine Mammal Management Division in cooperation with the Industry Services Branch (DFO).

The fish weir was utilized to determine whether it was feasible to capture charr and hold them alive until transportation, by float-equipped aircraft, to the freezer plant in Cambridge Bay could be assured. Aircraft delays in the past, due to weather, mechanical problems and aircraft availability have resulted in significant fish cullage (spoilage) at the fishing site. Complete details on the saputit fishery operation will be published at a later date.

## SAMPLING AND DATA ANALYSIS

Sampling methods used were the same as in past years (Kristofferson and Carder 1980). Annual mortality rates (natural and fishing) were calculated using the method of Robson and Chapman (1961), using the formula for some ages combined.

## ACKNOWLEDGMENTS

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Summer field assistance was provided by W. Lazarowich (1979), D. MacDonell (1979), C. Douglas (1980) and M. Meijer (1980). A.H. Kristofferson and D.K. McGowan provided scientific advice. Drafting was done by Graphic Services (DFO). Typing was done by D. Holland.

As well, the author wishes to thank the DFO staff of Yellowknife and Hay River for their help. R.W. Moshenko and A.H. Kristofferson reviewed an earlier draft of the report.

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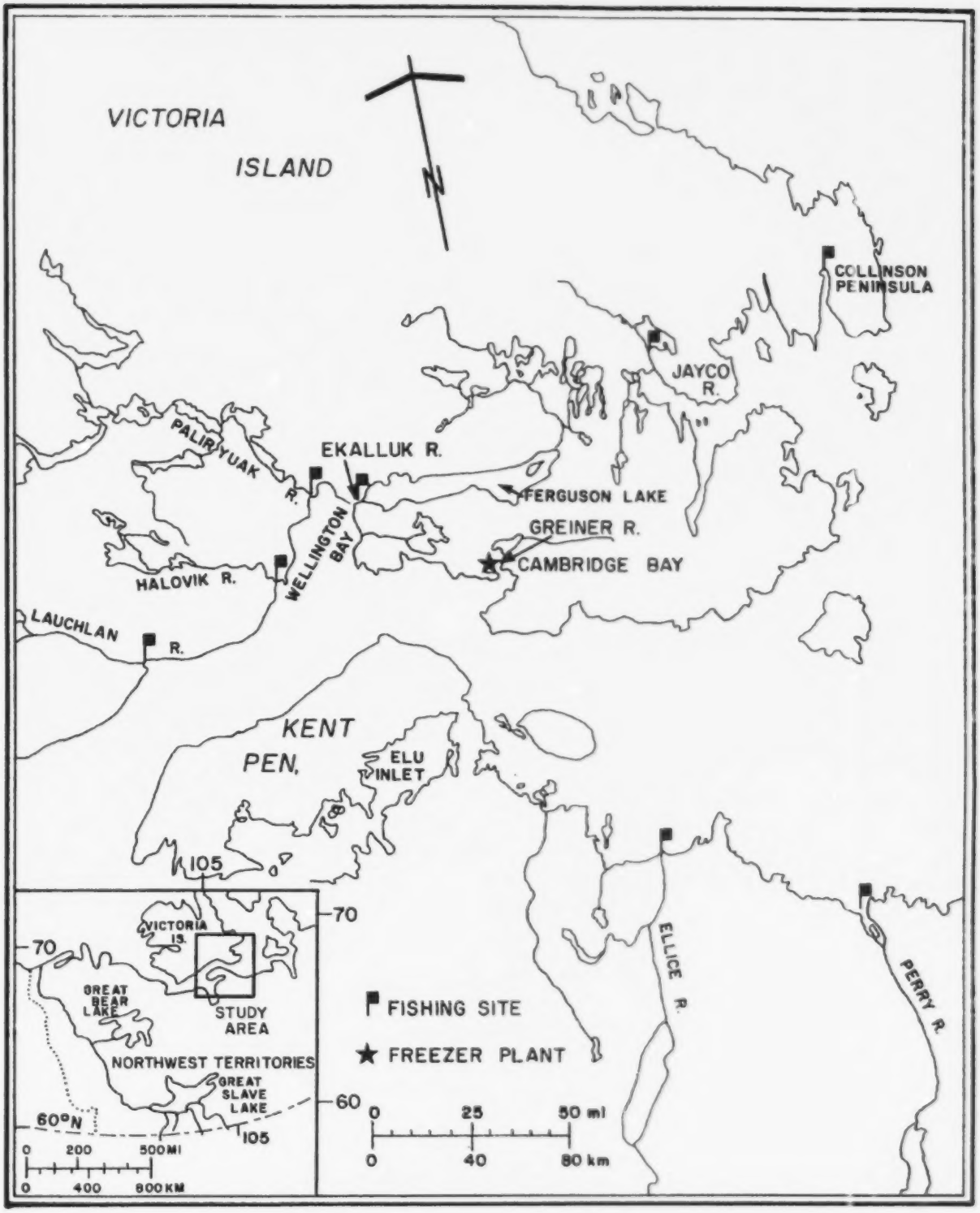


Fig. 1 Map of the Cambridge Bay area showing locations of commercial fishing sites.

Table 1. Production of anadromous Arctic charr by river system, Cambridge Bay fishery, 1979-80.

| River System | Annual Production (pounds round wt[a]) Quota (1979 & 1980) | 1979 Production | 1980 Production |
|---|---|---|---|
| Ekalluk | 32,000<br>25,600 dr[b] | 34,846<br>27,877 dr | 23,191<br>18,553 dr |
| Halovik (30 mile) | 15,000<br>12,000 dr | 16,130<br>12,904 dr | 16,493<br>13,194 dr |
| Paliryuak (Surrey) | 20,000<br>16,000 dr | 26,050<br>20,840 dr | 16,529<br>13,223 dr |
| Lauchlan (Byron Bay) | 20,000<br>16,000 dr | 23,910<br>19,128 dr | 20,174<br>16,139 dr |
| Ellice | 20,000<br>16,000 dr | 15,823<br>12,658 dr | 14,616<br>11,693 dr |
| Perry | 25,000<br>20,000 dr | 3,828<br>3,062 dr | 7,444<br>5,955 dr |
| Jayco River | 30,000<br>24,000 dr | 26,973<br>21,578 dr | 31,903<br>25,522 dr |
| Collinson Peninsula | 10,000<br>8,000 dr | 2,411<br>1,929 dr | -<br>- |

[a] Round weight calculated using a dressed weight to round weight conversion factor of 1.25.

[b] Dressed weight (viscera and gills removed).

Table 2. Age composition of Arctic charr taken by the commercial fishery at Ekalluk River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 9 | 1 | 1 | 49.0 | - | 1000 | - |
| 11 | 7 | 10 | 58.2 | 6.6 | 1993 | 653 |
| 12 | 4 | 6 | 58.8 | 3.9 | 2015 | 388 |
| 13 | 16 | 22 | 63.0 | 3.8 | 2500 | 440 |
| 14 | 10 | 14 | 63.0 | 2.6 | 2372 | 252 |
| 15 | 17 | 24 | 66.6 | 3.8 | 2829 | 503 |
| 16 | 8 | 11 | 62.3 | 4.2 | 2331 | 546 |
| 17 | 6 | 8 | 66.6 | 3.5 | 2767 | 386 |
| 18 | 1 | 1 | 65.0 | - | 2750 | - |
| 19 | 2 | 3 | 67.1 | 3.8 | 2700 | 424 |
| TOTAL | 72 | | | | | |
| MEAN | | | 63.3 | 5.0 | 2475 | 548 |
| MEAN AGE | 14.2 | | | | | |

Table 3. Length composition of Arctic charr taken by the commercial fishery at Ekalluk River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 3 | 3 | 47.4 | 975 | 66 |
| 50 | 3 | 3 | 53.8 | 1470 | 61 |
| 55 | 11 | 11 | 58.4 | 2064 | 290 |
| 60 | 37 | 37 | 62.5 | 2347 | 163 |
| 65 | 37 | 37 | 67.2 | 2915 | 328 |
| 70 | 7 | 7 | 72.1 | 3493 | 265 |
| 75 | 3 | 3 | 76.6 | 4233 | 611 |
| TOTAL | 101 | | | | |
| MEAN | | | 64.2 | 2593 | 643 |

Table 4. Age composition of Arctic charr taken by the commercial fishery at Ekalluk River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 10 | 1 | 1 | 62.4 | - | 2600 | - |
| 11 | 1 | 1 | 63.0 | - | 2900 | - |
| 12 | 19 | 15 | 62.6 | 4.0 | 2755 | 407 |
| 13 | 25 | 20 | 62.0 | 3.7 | 2702 | 435 |
| 14 | 36 | 29 | 64.2 | 3.2 | 2914 | 373 |
| 15 | 21 | 17 | 65.3 | 4.4 | 3217 | 563 |
| 16 | 11 | 9 | 66.4 | 3.6 | 3214 | 719 |
| 17 | 6 | 5 | 65.1 | 4.8 | 3250 | 643 |
| 18 | 2 | 2 | 68.0 | 1.1 | 3375 | 318 |
| 19 | 2 | 2 | 69.3 | 9.0 | 3750 | 1414 |
| 20 | 1 | 1 | 71.4 | - | 3600 | - |
| TOTAL | 125 | | | | | |
| MEAN | | | 64.1 | 4.1 | 2964 | 534 |
| MEAN AGE | 14.1 | | | | | |

Table 5. Length composition of Arctic charr taken by the commercial fishery at Ekalluk River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 55 | 17 | 11 | 58.1 | 2447 | 390 |
| 60 | 72 | 46 | 62.5 | 2783 | 256 |
| 65 | 47 | 30 | 67.1 | 3232 | 341 |
| 70 | 18 | 12 | 72.0 | 3842 | 558 |
| 75 | 1 | 1 | 75.7 | 4750 | - |
| TOTAL | 155 | | | | |
| MEAN | | | 64.6 | 3018 | 538 |

Table 6. Age composition of Arctic charr taken by the commercial fishery at Halovik River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 9 | 4 | 3 | 46.5 | 6.5 | 825 | 328 |
| 10 | 6 | 4 | 55.2 | 2.2 | 1325 | 186 |
| 11 | 13 | 9 | 55.3 | 3.0 | 1408 | 311 |
| 12 | 10 | 7 | 59.8 | 4.0 | 1775 | 351 |
| 13 | 19 | 14 | 65.4 | 7.4 | 2389 | 858 |
| 14 | 21 | 15 | 68.3 | 5.5 | 2650 | 663 |
| 15 | 23 | 17 | 67.8 | 5.9 | 2648 | 715 |
| 16 | 20 | 14 | 71.1 | 5.1 | 3048 | 761 |
| 17 | 15 | 11 | 71.5 | 4.9 | 3197 | 890 |
| 18 | 6 | 4 | 74.5 | 4.9 | 3242 | 721 |
| 19 | 2 | 1 | 69.8 | 2.5 | 2925 | 601 |
| TOTAL | 139 | | | | | |
| MEAN | | | 65.8 | 8.2 | 2471 | 930 |
| MEAN AGE | 14.1 | | | | | |

Table 7. Length composition of Arctic charr taken by the commercial fishery at Halovik River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 35 | 1 | 0 | 39.0 | 500 | - |
| 40 | 2 | 1 | 42.6 | 625 | 35 |
| 45 | 4 | 1 | 48.3 | 900 | 41 |
| 50 | 29 | 10 | 52.6 | 1136 | 120 |
| 55 | 41 | 13 | 57.5 | 1565 | 190 |
| 60 | 44 | 14 | 62.6 | 1999 | 237 |
| 65 | 65 | 21 | 67.9 | 2661 | 298 |
| 70 | 77 | 25 | 72.7 | 3225 | 333 |
| 75 | 34 | 11 | 77.6 | 3879 | 379 |
| 80 | 7 | 2 | 81.0 | 4207 | 268 |
| TOTAL | 304 | | | | |
| MEAN | | | 66.3 | 2543 | 948 |

Table 8. Age composition of Arctic charr taken by the commercial fishery at Halovik River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 11 | 2 | 2 | 59.2 | 13.0 | 2025 | 1450 |
| 12 | 11 | 10 | 62.7 | 5.8 | 2382 | 704 |
| 13 | 16 | 14 | 62.4 | 5.6 | 2197 | 620 |
| 14 | 28 | 25 | 64.2 | 5.6 | 2393 | 633 |
| 15 | 23 | 20 | 68.1 | 3.9 | 2878 | 584 |
| 16 | 14 | 12 | 70.3 | 4.3 | 2968 | 535 |
| 17 | 11 | 10 | 69.2 | 3.4 | 3041 | 623 |
| 18 | 3 | 3 | 70.0 | 5.4 | 2933 | 1103 |
| 19 | 4 | 4 | 68.4 | 7.0 | 2838 | 739 |
| 20 | 2 | 2 | 72.7 | 6.1 | 3175 | 884 |
| TOTAL | 114 | | | | | |
| MEAN | | | 66.2 | 5.9 | 2632 | 701 |
| MEAN AGE | 14.7 | | | | | |

Table 9. Length composition of Arctic charr taken by the commercial fishery at Halovik River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 50 | 10 | 6 | 51.9 | 1165 | 167 |
| 55 | 11 | 7 | 58.0 | 1618 | 123 |
| 60 | 27 | 16 | 63.1 | 2239 | 295 |
| 65 | 62 | 38 | 67.3 | 2727 | 327 |
| 70 | 41 | 25 | 72.0 | 3260 | 298 |
| 75 | 14 | 8 | 76.8 | 3714 | 409 |
| TOTAL | 165 | | | | |
| MEAN | | | 67.1 | 2695 | 717 |

Table 10. Age composition of Arctic charr taken by the commercial fishery at Paliryuak River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 10 | 1 | 1 | 58.8 | - | 1800 | - |
| 11 | 14 | 10 | 58.2 | 6.7 | 1604 | 589 |
| 12 | 18 | 13 | 65.1 | 5.4 | 2308 | 606 |
| 13 | 24 | 18 | 65.6 | 6.7 | 2410 | 759 |
| 14 | 24 | 18 | 67.9 | 5.2 | 2585 | 573 |
| 15 | 16 | 12 | 72.1 | 5.0 | 3175 | 716 |
| 16 | 19 | 14 | 70.8 | 5.6 | 3063 | 623 |
| 17 | 9 | 7 | 69.4 | 5.8 | 2817 | 640 |
| 18 | 6 | 4 | 73.7 | 5.0 | 3392 | 1013 |
| 19 | 5 | 4 | 74.5 | 1.5 | 3330 | 251 |
| 20 | 1 | 1 | 73.5 | - | 2650 | - |
| TOTAL | 137 | | | | | |
| MEAN | | | 67.6 | 7.0 | 2626 | 804 |
| MEAN AGE | 14.2 | | | | | |

Table 11. Length composition of Arctic charr taken by the commercial fishery at Paliryuak River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 1 | 0 | 45.7 | 800 | - |
| 50 | 20 | 8 | 52.9 | 1205 | 105 |
| 55 | 27 | 11 | 57.7 | 1554 | 198 |
| 60 | 42 | 17 | 62.6 | 2046 | 271 |
| 65 | 63 | 25 | 67.7 | 2650 | 354 |
| 70 | 69 | 27 | 72.0 | 3112 | 439 |
| 75 | 27 | 11 | 76.8 | 3750 | 434 |
| 80 | 5 | 2 | 81.6 | 4370 | 416 |
| TOTAL | 254 | | | | |
| MEAN | | | 66.9 | 2589 | 855 |

Table 12. Age composition of Arctic charr taken by the commercial fishery at Paliryuak River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 8 | 1 | 1 | 52.7 | - | 1200 | - |
| 9 | 1 | 1 | 48.2 | - | 1000 | - |
| 10 | 5 | 4 | 54.3 | 6.8 | 1400 | 599 |
| 11 | 8 | 6 | 58.0 | 6.2 | 1669 | 681 |
| 12 | 21 | 15 | 59.8 | 6.4 | 1943 | 754 |
| 13 | 20 | 15 | 66.3 | 6.2 | 2685 | 779 |
| 14 | 18 | 13 | 67.0 | 5.0 | 2717 | 668 |
| 15 | 29 | 21 | 67.3 | 4.1 | 2712 | 526 |
| 16 | 12 | 9 | 68.2 | 4.9 | 2708 | 630 |
| 17 | 9 | 7 | 68.0 | 4.4 | 2667 | 568 |
| 18 | 6 | 4 | 73.0 | 6.1 | 3367 | 830 |
| 19 | 6 | 4 | 68.4 | 7.8 | 2792 | 1184 |
| TOTAL | 136 | | | | | |
| MEAN | | | 65.1 | 7.0 | 2486 | 821 |
| MEAN AGE | 14.1 | | | | | |

Table 13. Length composition of Arctic charr taken by the commercial fishery at Paliryuak River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 3 | 2 | 46.9 | 850 | 132 |
| 50 | 15 | 8 | 52.7 | 1207 | 80 |
| 55 | 18 | 9 | 57.3 | 1564 | 152 |
| 60 | 42 | 21 | 62.5 | 2158 | 288 |
| 65 | 60 | 30 | 67.6 | 2734 | 298 |
| 70 | 51 | 26 | 71.7 | 3224 | 360 |
| 75 | 7 | 4 | 77.0 | 3850 | 311 |
| 80 | 3 | 2 | 81.5 | 4783 | 161 |
| TOTAL | 199 | | | | |
| MEAN | | | 65.8 | 2559 | 804 |

Table 14. Age composition of Arctic charr taken by the commercial fishery at Lauchlan River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 9 | 1 | 1 | 51.8 | - | 1250 | - |
| 10 | 3 | 2 | 59.3 | 7.4 | 1850 | 755 |
| 11 | 3 | 2 | 62.7 | 4.6 | 2250 | 436 |
| 12 | 24 | 15 | 61.4 | 5.9 | 2085 | 641 |
| 13 | 33 | 20 | 64.6 | 5.1 | 2388 | 570 |
| 14 | 26 | 16 | 66.9 | 6.2 | 2650 | 741 |
| 15 | 33 | 20 | 68.7 | 4.3 | 2847 | 517 |
| 16 | 20 | 12 | 69.1 | 4.1 | 2818 | 534 |
| 17 | 13 | 8 | 72.0 | 4.3 | 3185 | 543 |
| 18 | 3 | 2 | 73.5 | 5.5 | 3033 | 480 |
| 19 | 4 | 2 | 72.9 | 3.4 | 3125 | 486 |
| 20 | 1 | 1 | 77.0 | - | 3450 | - |
| 23 | 1 | 1 | 70.5 | - | 2400 | - |
| TOTAL | 165 | | | | | |
| MEAN | | | 66.7 | 6.2 | 2609 | 678 |
| MEAN AGE | 14.3 | | | | | |

Table 15. Length composition of Arctic charr taken by the commercial fishery at Lauchlan River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 50 | 13 | 4 | 52.5 | 1212 | 123 |
| 55 | 22 | 7 | 58.1 | 1659 | 172 |
| 60 | 52 | 16 | 62.5 | 2082 | 194 |
| 65 | 111 | 35 | 67.7 | 2726 | 328 |
| 70 | 88 | 28 | 72.1 | 3159 | 300 |
| 75 | 27 | 8 | 76.6 | 3504 | 397 |
| 80 | 6 | 2 | 81.1 | 4042 | 410 |
| TOTAL | 319 | | | | |
| MEAN | | | 67.8 | 2696 | 679 |

Table 16. Age composition of Arctic charr taken by the commercial fishery at Lauchlan River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 10 | 2 | 2 | 65.6 | 2.1 | 2625 | 177 |
| 12 | 16 | 12 | 62.5 | 6.4 | 2316 | 685 |
| 13 | 16 | 12 | 66.0 | 4.1 | 2525 | 454 |
| 14 | 28 | 21 | 67.4 | 3.3 | 2845 | 490 |
| 15 | 27 | 21 | 68.3 | 4.4 | 2887 | 515 |
| 16 | 19 | 15 | 68.6 | 3.6 | 2913 | 581 |
| 17 | 11 | 8 | 68.4 | 3.5 | 2891 | 401 |
| 18 | 3 | 2 | 67.1 | 4.2 | 2967 | 794 |
| 19 | 5 | 4 | 68.6 | 2.0 | 2900 | 229 |
| 20 | 3 | 2 | 67.9 | 3.4 | 2817 | 275 |
| 21 | 1 | 1 | 67.2 | - | 2750 | - |
| TOTAL | 131 | | | | | |
| MEAN | | | 67.1 | 4.4 | 2764 | 544 |
| MEAN AGE | 14.8 | | | | | |

Table 17. Length composition of Arctic charr taken by the commercial fishery at Lauchlan River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 1 | 1 | 48.0 | 1050 | - |
| 50 | 2 | 1 | 53.2 | 1225 | 35 |
| 55 | 9 | 5 | 58.1 | 1889 | 408 |
| 60 | 25 | 14 | 63.2 | 2224 | 332 |
| 65 | 92 | 52 | 67.4 | 2817 | 266 |
| 70 | 45 | 25 | 71.5 | 3191 | 344 |
| 75 | 3 | 2 | 77.6 | 3967 | 104 |
| TOTAL | 177 | | | | |
| MEAN | | | 67.3 | 2773 | 535 |

Table 18. Age composition of Arctic charr taken by the commercial fishery at Ellice River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 7 | 1 | 1 | 43.4 | - | 700 | - |
| 8 | 1 | 1 | 41.0 | - | 700 | - |
| 9 | 6 | 5 | 58.7 | 6.7 | 2217 | 716 |
| 10 | 26 | 22 | 59.5 | 5.4 | 2302 | 586 |
| 11 | 43 | 36 | 61.4 | 3.9 | 2536 | 472 |
| 12 | 20 | 17 | 63.6 | 5.3 | 2820 | 680 |
| 13 | 10 | 8 | 67.8 | 6.4 | 3160 | 683 |
| 14 | 4 | 3 | 66.9 | 6.2 | 3225 | 964 |
| 15 | 5 | 4 | 69.9 | 6.1 | 3730 | 836 |
| 16 | 3 | 3 | 67.6 | 6.2 | 3250 | 786 |
| TOTAL | 119 | | | | | |
| MEAN | | | 62.1 | 6.3 | 2629 | 737 |
| MEAN AGE | 11.4 | | | | | |

Table 19. Length composition of Arctic charr taken by the commercial fishery at Ellice River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 40 | 3 | 2 | 43.0 | 750 | 87 |
| 50 | 14 | 8 | 52.0 | 1504 | 256 |
| 55 | 30 | 17 | 57.9 | 2150 | 260 |
| 60 | 71 | 41 | 62.3 | 2602 | 244 |
| 65 | 40 | 23 | 66.7 | 3066 | 360 |
| 70 | 9 | 5 | 73.0 | 3956 | 549 |
| 75 | 6 | 3 | 76.7 | 4267 | 430 |
| 80 | 2 | 1 | 80.3 | 4600 | 636 |
| TOTAL | 175 | | | | |
| MEAN | | | 62.7 | 2661 | 751 |

Table 20. Age composition of Arctic charr taken by the commercial fishery at Ellice River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 7 | 1 | 1 | 41.0 | - | 8500 | - |
| 8 | 1 | 1 | 49.0 | - | 1300 | - |
| 10 | 25 | 23 | 58.6 | 3.7 | 2378 | 429 |
| 11 | 32 | 30 | 60.9 | 3.5 | 2694 | 462 |
| 12 | 30 | 28 | 61.4 | 3.9 | 2647 | 546 |
| 13 | 14 | 13 | 61.3 | 4.4 | 2704 | 631 |
| 14 | 3 | 3 | 61.2 | 2.5 | 2550 | 328 |
| 15 | 2 | 2 | 61.9 | 2.9 | 2550 | 212 |
| TOTAL | 108 | | | | | |
| MEAN | | | 60.3 | 4.4 | 2643 | 768 |
| MEAN AGE | 11.4 | | | | | |

Table 21. Length composition of Arctic charr taken by the commercial fishery at Ellice River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 40 | 2 | 1 | 41.9 | 4700 | 5374 |
| 45 | 2 | 1 | 49.4 | 1300 | 0 |
| 50 | 7 | 4 | 53.2 | 1700 | 269 |
| 55 | 69 | 41 | 58.2 | 2381 | 293 |
| 60 | 70 | 42 | 62.2 | 2740 | 224 |
| 65 | 13 | 8 | 67.0 | 3242 | 314 |
| 70 | 5 | 3 | 73.1 | 4410 | 417 |
| TOTAL | 168 | | | | |
| MEAN | | | 60.5 | 2644 | 711 |

Table 22. Age composition of Arctic charr taken by the commercial fishery at Perry River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 10 | 6 | 9 | 56.5 | 8.0 | 1842 | 813 |
| 11 | 11 | 17 | 57.1 | 4.6 | 1968 | 648 |
| 12 | 15 | 23 | 61.0 | 5.5 | 2427 | 606 |
| 13 | 10 | 16 | 65.9 | 6.1 | 2820 | 767 |
| 14 | 8 | 13 | 62.3 | 7.2 | 2531 | 1083 |
| 15 | 7 | 11 | 66.4 | 6.4 | 2964 | 710 |
| 16 | 5 | 8 | 71.2 | 4.3 | 3610 | 829 |
| 17 | 1 | 2 | 56.8 | - | 1950 | - |
| 18 | 1 | 2 | 80.1 | - | 5100 | - |
| TOTAL | 64 | | | | | |
| MEAN | | | 62.5 | 7.5 | 2553 | 920 |
| MEAN AGE | 12.9 | | | | | |

Table 23. Length composition of Arctic charr taken by the commercial fishery at Perry River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 2 | 2 | 49.3 | 1175 | 106 |
| 50 | 11 | 13 | 53.1 | 1468 | 145 |
| 55 | 21 | 24 | 57.4 | 1955 | 265 |
| 60 | 19 | 22 | 62.6 | 2529 | 383 |
| 65 | 17 | 20 | 67.4 | 3100 | 304 |
| 70 | 12 | 14 | 71.8 | 3363 | 321 |
| 75 | 4 | 5 | 75.7 | 4675 | 328 |
| 80 | 1 | 1 | 80.1 | 5100 | - |
| TOTAL | 87 | | | | |
| MEAN | | | 62.8 | 2580 | 895 |

Table 24. Age composition of Arctic charr taken by the commercial fishery at Perry River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 9 | 2 | 2 | 578 | 102.5 | 2375 | 1167 |
| 10 | 14 | 17 | 534 | 51.8 | 1729 | 529 |
| 11 | 28 | 33 | 561 | 58.2 | 2071 | 641 |
| 12 | 19 | 23 | 591 | 47.0 | 2371 | 530 |
| 13 | 12 | 14 | 606 | 64.1 | 2592 | 841 |
| 14 | 4 | 5 | 610 | 48.3 | 2588 | 800 |
| 15 | 4 | 5 | 632 | 49.3 | 2613 | 697 |
| 16 | 1 | 1 | 660 | - | 2900 | - |
| TOTAL | 84 | | | | | |
| MEAN | | | 577 | 60.7 | 2224 | 695 |
| MEAN AGE | 11.7 | | | | | |

Table 25. Length composition of Arctic charr taken by the commercial fishery at Perry River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 45 | 12 | 8 | 47.7 | 1313 | 436 |
| 50 | 28 | 19 | 52.6 | 1693 | 327 |
| 55 | 46 | 32 | 57.5 | 2236 | 387 |
| 60 | 36 | 25 | 62.1 | 2651 | 349 |
| 65 | 18 | 12 | 66.8 | 3275 | 465 |
| 70 | 2 | 1 | 72.6 | 4125 | 106 |
| 75 | 3 | 2 | 75.9 | 4517 | 946 |
| TOTAL | 145 | | | | |
| MEAN | | | 58.6 | 2360 | 773 |

Table 26. Age composition of Arctic charr taken by the commercial fishery (downstream migration) at Jayco River, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 10 | 1 | 1 | 65.4 | - | 2950 | - |
| 11 | 8 | 6 | 61.3 | 8.4 | 1938 | 821 |
| 12 | 9 | 7 | 63.9 | 6.3 | 2256 | 765 |
| 13 | 14 | 11 | 65.2 | 6.5 | 2339 | 713 |
| 14 | 10 | 8 | 66.6 | 7.5 | 2560 | 844 |
| 15 | 16 | 13 | 67.8 | 5.6 | 2794 | 699 |
| 16 | 9 | 7 | 68.9 | 6.1 | 2650 | 647 |
| 17 | 21 | 17 | 72.8 | 3.2 | 3262 | 291 |
| 18 | 18 | 14 | 71.4 | 5.2 | 3014 | 653 |
| 19 | 3 | 2 | 72.7 | 4.0 | 3217 | 683 |
| 20 | 5 | 4 | 71.2 | 3.2 | 3260 | 538 |
| 21 | 3 | 2 | 75.1 | 1.7 | 3583 | 208 |
| 22 | 5 | 4 | 73.1 | 7.5 | 2950 | 747 |
| 23 | 3 | 2 | 72.1 | 4.2 | 3050 | 577 |
| 24 | 1 | 1 | 76.1 | - | 3600 | - |
| 27 | 1 | 1 | 76.3 | - | 4250 | - |
| TOTAL | 127 | | | | | |
| MEAN | | | 69.0 | 6.6 | 2810 | 752 |
| MEAN AGE | 16.1 | | | | | |

Table 27. Length composition of Arctic charr taken by the commercial fishery (downstream migration) at Jayco River, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 50 | 8 | 3 | 53.7 | 1163 | 151 |
| 55 | 19 | 7 | 57.7 | 1605 | 203 |
| 60 | 31 | 11 | 62.2 | 1992 | 291 |
| 65 | 46 | 17 | 67.8 | 2712 | 375 |
| 70 | 113 | 41 | 72.4 | 3142 | 309 |
| 75 | 56 | 20 | 76.8 | 3617 | 330 |
| 80 | 5 | 2 | 81.7 | 3930 | 380 |
| TOTAL | 278 | | | | |
| MEAN | | | 70.0 | 2890 | 738 |

Table 28. Age composition of Arctic charr taken by the commercial fishery (downstream migration) at Jayco River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 11 | 2 | 2 | 53.3 | 5.3 | 1200 | 354 |
| 12 | 16 | 19 | 54.9 | 6.2 | 1381 | 475 |
| 13 | 10 | 12 | 54.9 | 7.6 | 1415 | 661 |
| 14 | 12 | 14 | 58.5 | 5.0 | 1633 | 514 |
| 15 | 8 | 9 | 62.2 | 5.8 | 2031 | 651 |
| 16 | 15 | 18 | 64.9 | 7.6 | 2350 | 886 |
| 17 | 9 | 11 | 65.4 | 8.2 | 2289 | 949 |
| 18 | 3 | 4 | 69.7 | 7.6 | 2617 | 797 |
| 19 | 4 | 5 | 71.1 | 11.4 | 2888 | 1066 |
| 20 | 4 | 5 | 69.0 | 4.9 | 2838 | 1584 |
| 21 | 2 | 2 | 72.0 | 3.5 | 2750 | 566 |
| TOTAL | 85 | | | | | |
| MEAN | | | 61.3 | 8.7 | 1960 | 894 |
| MEAN AGE | 15.0 | | | | | |

Table 29. Length composition of Arctic charr taken by the commercial fishery (downstream migration) at Jayco River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 40 | 2 | 1 | 43.8 | 700 | 71 |
| 45 | 7 | 5 | 47.9 | 886 | 80 |
| 50 | 18 | 12 | 52.9 | 1161 | 142 |
| 55 | 31 | 21 | 57.6 | 1453 | 151 |
| 60 | 22 | 15 | 62.5 | 1834 | 257 |
| 65 | 26 | 18 | 67.2 | 2388 | 324 |
| 70 | 26 | 18 | 72.8 | 3096 | 485 |
| 75 | 12 | 8 | 76.7 | 3529 | 273 |
| 80 | 2 | 1 | 80.3 | 4185 | 969 |
| TOTAL | 146 | | | | |
| MEAN | | | 63.4 | 2104 | 904 |

Table 30. Age composition of Arctic charr taken by the commercial fishery (upstream migration) at Jayco River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 11 | 1 | 1 | 66.5 | - | 3050 | - |
| 12 | 7 | 9 | 58.2 | 4.3 | 2029 | 399 |
| 13 | 4 | 5 | 61.3 | 4.4 | 2575 | 870 |
| 14 | 14 | 18 | 62.9 | 5.4 | 2411 | 600 |
| 15 | 15 | 19 | 62.8 | 6.1 | 2403 | 616 |
| 16 | 15 | 19 | 63.2 | 5.0 | 2400 | 704 |
| 17 | 7 | 9 | 68.8 | 8.4 | 3043 | 1033 |
| 18 | 6 | 8 | 68.3 | 5.0 | 3025 | 865 |
| 19 | 2 | 3 | 67.4 | 6.2 | 2975 | 601 |
| 20 | 4 | 5 | 67.4 | 5.9 | 2625 | 868 |
| 21 | 3 | 4 | 68.3 | 7.6 | 2750 | 1044 |
| 23 | 2 | 3 | 61.6 | 0.1 | 1925 | 106 |
| TOTAL | 80 | | | | | |
| MEAN | | | 63.9 | 6.1 | 2517 | 733 |
| MEAN AGE | 15.8 | | | | | |

Table 31. Length composition of Arctic charr taken by the commercial fishery (upstream migration) at Jayco River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 50 | 8 | 5 | 53.5 | 1606 | 105 |
| 55 | 29 | 19 | 58.2 | 1903 | 259 |
| 60 | 50 | 33 | 62.5 | 2320 | 365 |
| 65 | 41 | 27 | 67.3 | 2793 | 428 |
| 70 | 16 | 11 | 72.2 | 3369 | 352 |
| 75 | 8 | 5 | 77.1 | 3881 | 544 |
| TOTAL | 152 | | | | |
| MEAN | | | 64.3 | 2523 | 675 |

Table 32. Age composition of Arctic charr taken by the commercial fishery (downstream and upstream migrations combined) at Jayco River, 1980.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 11 | 3 | 2 | 57.7 | 8.5 | 1817 | 1097 |
| 12 | 23 | 14 | 55.9 | 5.8 | 1578 | 538 |
| 13 | 14 | 8 | 56.8 | 7.3 | 1746 | 879 |
| 14 | 26 | 16 | 60.9 | 5.6 | 2052 | 678 |
| 15 | 23 | 14 | 62.6 | 5.8 | 2274 | 640 |
| 16 | 30 | 18 | 64.1 | 6.4 | 2375 | 786 |
| 17 | 16 | 10 | 66.9 | 8.2 | 2619 | 1028 |
| 18 | 9 | 5 | 68.8 | 5.5 | 2889 | 817 |
| 19 | 6 | 4 | 69.9 | 9.4 | 2917 | 870 |
| 20 | 8 | 5 | 68.2 | 5.1 | 2731 | 1188 |
| 21 | 5 | 3 | 69.8 | 6.0 | 2750 | 791 |
| 23 | 2 | 1 | 61.6 | 0.1 | 1925 | 106 |
| TOTAL | 165 | | | | | |
| MEAN | | | 62.6 | 7.6 | 2230 | 864 |
| MEAN AGE | 15.4 | | | | | |

Table 33. Length composition of Arctic charr taken by the commercial fishery (downstream and upstream migrations combined) at Jayco River, 1980.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 40 | 2 | 1 | 43.8 | 700 | 71 |
| 45 | 7 | 2 | 47.9 | 886 | 80 |
| 50 | 26 | 9 | 53.1 | 1298 | 246 |
| 55 | 60 | 20 | 57.9 | 1671 | 308 |
| 60 | 72 | 24 | 62.5 | 2171 | 403 |
| 65 | 67 | 22 | 67.3 | 2636 | 436 |
| 70 | 42 | 14 | 72.5 | 3200 | 454 |
| 75 | 20 | 7 | 76.8 | 3670 | 428 |
| 80 | 2 | 1 | 80.3 | 4185 | 969 |
| TOTAL | 298 | | | | |
| MEAN | | | 63.9 | 2318 | 821 |

Table 34. Age composition of Arctic charr taken by the commercial fishery at Collinson Peninsula, 1979.

| AGE (YR) | NO. | PERCENT | FORK LENGTH(CM) MEAN | FORK LENGTH(CM) SD | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|---|
| 13 | 3 | 10 | 62.3 | 6.3 | 2250 | 794 |
| 14 | 1 | 3 | 62.8 | - | 2000 | - |
| 15 | 1 | 3 | 66.0 | - | 2400 | - |
| 16 | 4 | 14 | 71.0 | 1.3 | 2775 | 202 |
| 17 | 4 | 14 | 73.1 | 6.6 | 2988 | 784 |
| 18 | 5 | 17 | 70.3 | 7.5 | 2640 | 886 |
| 19 | 4 | 14 | 72.1 | 3.5 | 2938 | 446 |
| 20 | 3 | 10 | 72.5 | 2.8 | 2717 | 751 |
| 21 | 1 | 3 | 74.9 | - | 3100 | - |
| 22 | 1 | 3 | 75.9 | - | 3450 | - |
| 23 | 2 | 7 | 69.9 | 2.7 | 2625 | 177 |
| TOTAL | 29 | | | | | |
| MEAN | | | 70.4 | 5.6 | 2728 | 616 |
| MEAN AGE | 17.8 | | | | | |

Table 35. Length composition of Arctic charr taken by the commercial fishery at Collinson Peninsula, 1979.

| LENGTH INTERVAL (CM) | NO. | PERCENT | MEAN FORK LENGTH(CM) | DRESSED WEIGHT(G) MEAN | DRESSED WEIGHT(G) SD |
|---|---|---|---|---|---|
| 55 | 4 | 9 | 58.4 | 1563 | 307 |
| 60 | 1 | 2 | 62.8 | 2000 | - |
| 65 | 7 | 15 | 67.7 | 2586 | 388 |
| 70 | 22 | 48 | 72.6 | 2861 | 391 |
| 75 | 11 | 24 | 76.8 | 3255 | 633 |
| 80 | 1 | 2 | 81.7 | 3900 | - |
| TOTAL | 46 | | | | |
| MEAN | | | 71.6 | 2804 | 651 |

Table 36. Annual mortality rates for Arctic charr taken by the commercial fisheries at the Ekalluk, Halovik, Paliryuak, Lauchlan, Ellice and Perry rivers.

| | Age classes used | Survival (S) | SE of S | Var. S | Annual mortality rate A where A = 1-S |
|---|---|---|---|---|---|
| Ekalluk River | | | | | |
| 1979 | 16-19 | .4615 | .1000 | .0100 | .5385 |
| 1980 | 15-20 | .5000 | .0576 | .0033 | .5000 |
| Halovik River | | | | | |
| 1979 | 16-19 | .4697 | .0628 | .0039 | .5303 |
| 1980 | 15-20 | .5676 | .0477 | .0023 | .4324 |
| Paliryuak River | | | | | |
| 1979 | 17-20 | .5455 | .0874 | .0076 | .4545 |
| 1980 | 16-19 | .6111 | .0669 | .0045 | .3889 |
| Lauchlan River | | | | | |
| 1979 | 17-23 | .4844 | .0633 | .0040 | .5156 |
| 1980 | 15-21 | .5746 | .0431 | .0019 | .4253 |
| Ellice River | | | | | |
| 1979 | 12-16 | .5313 | .0622 | .0039 | .4687 |
| 1980 | 12-15 | .3529 | .0587 | .0034 | .6471 |
| Perry River | | | | | |
| 1979 | 14-18 | .6324 | .0598 | .0036 | .3676 |
| 1980 | 12-16 | .4918 | .0647 | .0042 | .5082 |

Table 37. Annual mortality rate for Arctic charr taken by the commercial fishery at the Jayco River.

| | Age classes used | Survival (S) | SE of S | Var. S | Annual mortality rate A where A = 1-S |
|---|---|---|---|---|---|
| Downstream migration | | | | | |
| 1979 | 18-27 | .5385 | .0798 | .0064 | .4615 |
| 1980 | 17-21 | .5909 | .1048 | .0110 | .4091 |
| Upstream migration | | | | | |
| 1980 | 17-23 | .6829 | .0732 | .0054 | .3171 |
| Downstream and upstream migration combined - 1980 | 17-23 | .6804 | .0470 | .0022 | .3196 |

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